Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1 – 41. (cancelled)

42. An ion mobility spectrometer comprising an ionizer, an ion filter, and an ion detector;

wherein the ion filter defines at least one ion channel along which ions may pass from the ionizer to the ion detector; and

wherein the ion channel is defined by a plurality of conductive layers separated along the length of the channel by at least one non-conductive layer;

the spectrometer further comprising a controller configured to apply electric potential to the conductive layers of the ion channel.

43. The spectrometer of claim 42, further comprising a deflector, for deflecting ions away from the ionizer and towards the ion detector.

44. The spectrometer of claim 42, wherein the controller allows the application of a time-varying electric potential to the conductive layers.

45. The spectrometer of claim 44, wherein the electric potential is oscillating.

46. The spectrometer of claim 44, wherein the electric potential is time-varying in an asymmetric manner.

47. The spectrometer of claim 42, wherein the controller allows the electric potential to be selectively varied.

48. The spectrometer of claim 42, wherein the filter comprises a plurality of ion channels.

49. The spectrometer of claim 48, wherein the conductive layers form electrodes and the ion channels are defined at either end by apertures in said electrodes.

50. The spectrometer of claim 42, wherein the filter comprises two or more interdigitated electrode arrays, each array having a plurality of channel-defining slots.

51. The spectrometer of claim 42, wherein the filter comprises a resistive or semiconductive substrate on which the conductive layers and non-conductive layer are provided.

52. The spectrometer of claim 51, wherein the substrate is the ion detector.

53. The spectrometer of claim 42, wherein two conductive layers are provided.

54. The spectrometer of claim 42, wherein two non-conductive layers are provided.

55. The spectrometer of claim 42, wherein the filter has the structure C-NC-C-NC, where C and NC represent conductive and non-conductive layers respectively.

56. The spectrometer of claim 55, wherein the filter further includes a substrate.

57. The spectrometer of claim 42, wherein the filter has the structure C-NC-substrate-NC-C, where C and NC represent conductive and non-conductive layers respectively.

58. The spectrometer of claim 42, wherein the spectrometer comprises a plurality of functional layers.

59. The spectrometer of claim 42 further comprising a semi-permeable membrane.

60. The spectrometer of claim 59, wherein the membrane comprises a heating element.

61. The spectrometer of claim 59, wherein the membrane is in the form of an inlet tube.

62. The spectrometer of claim 42 that comprises a standard.

63. The spectrometer of claim 42 that comprises multiple ion filters.

64. The spectrometer of claim 42 that comprises multiple ion detectors.

65. The spectrometer of claim 42, further comprising a gas flow generator that can generate a glass flow through the spectrometer.

66. The spectrometer of claim 65 wherein the gas flow is a counterflow against the direction of movement of ions.

67. The spectrometer of claim 42, further comprising a heater configured to heat the filter.

68. The spectrometer of claim 67, wherein the heater comprises a substrate which is heated by Joule effect heating.

69. The spectrometer of claim 42, wherein the ion channel includes inert conductive particles located on the walls of the channel along its length.

70. The spectrometer of claim 42, wherein the ion filter comprises a wafer-like form.

71. The spectrometer of claim 42, wherein the ion filter comprises a plurality of stacked planar layers.

72. The spectrometer of claim 42, wherein the ion channel is curved or serpentine.

73. The spectrometer of claim 42 that is coupled to one or more other detection or analysis devices.

74. The spectrometer of claim 42, further comprising a controller configured to operate the spectrometer periodically to sample at intervals.

75. The spectrometer of claim 42, wherein the ion detector comprises an electrode coupled to a capacitor which is periodically discharged.

76. A method of analyzing a sample, the method comprising:

ionizing a sample to generate ions adjacent an ion channel, the ion channel being defined by a plurality of conductive layers separated along the length of the channel by at least one non-conductive layer;

biasing the ions such that, in the absence of other forces, they would tend to travel along the ion channel;

applying electric potential to the conductive layers, such that an electric field is established within the ion channel; and

detecting generated ions which have passed through the ion channel.

77. An ion filter for use in an ion mobility spectrometer, the filter defining at least one ion channel along which ions may pass, wherein the ion channel is defined by a plurality of conductive layers separated along the length of the channel by at least one non-conductive layer.

78. The filter of claim 77, having the structure C-NC-C-NC, where C and NC represent conductive and non-conductive layers respectively.

79. The filter of claim 77, having the structure C-NC-substrate-NC-C, where C and NC represent conductive and non-conductive layers respectively.

80. A method of manufacturing an ion mobility spectrometer, the method comprising the steps of:

providing a generally planar resistive substrate having thereon a plurality of conductive layers separated by at least one non-conductive layer;

patterning the substrate to provide a filter comprising two or more interdigitated electrode arrays defining a plurality of ion channels themselves defined by a plurality of conductive layers separated along the length of the channel by at least one non-conductive layer; and

attaching said filter on one face to a generally planar ionisation layer comprising an ionizer configured to ionize an analyte.

81. An ion mobility spectrometer comprising an ionizer, an ion filter, and an ion detector;

wherein the ion filter defines at least one ion channel along which ions may pass from the ionizer to the ion detector; and wherein the ion filter comprises a plurality of electrodes disposed proximate the ion channel;

the spectrometer further comprising electrode controller for controlling the electrodes such that a first drive electric field is generated along the length of the ion channel, and a second transverse electric field is generated orthogonal to the first; and

additional controller for operating the spectrometer periodically to sample at intervals.

82. An ion filter for use in a spectrometer such as an ion mobility spectrometer, the filter comprising a pair of interdigitated electrodes defining a plurality of ion channels along which ions may pass.